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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/523,267	01/31/2005	Tohru Ishizuya	4641-70412-01	1135

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EXAMINER	
CHIU, TSZ K	
ART UNIT	**PAPER NUMBER**
2822	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/04/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/523,267	ISHIZUYA, TOHRU	
	Examiner	Art Unit	
	Tsz K. Chiu	2822	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 October 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

Applicant's arguments with respect to claim 1-7 have been considered but are moot in view of the new ground(s) of rejection.

On form 892 examiner inadvertently inserted the following references: Park '390; Suzuki '301; Ishizya '932; Takeda '387; these reference has been sited in 1449. Yagi is sited in 892 filed on June 30, 2006 as applicant noted that Yagi does not appear on the examiner's 892 or applicant's form 1449.

Applicant argue that the park discussed herein are not satisfied by Yagi and argue that the Park 390 reference does not teach the sacrificial layer are remove by dry "etch process" however, in Park 390 disclose a three dimensional structure element to remove the sacrificial layer by dry or wet process column 2, lines 1-5.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 7 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim recites the " area with dummy area with a **dry process.**"

What is the dry process?

Is the leaving the wafer dry encompass process?

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 1-4, 8, 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Park et al. (6,136,390) in view of Kim et al. (6420744).

With respect to claim 1, Park discloses a substrate (312, For example Fig. 2L); and three-dimensional structures (right 301, For example Fig. 2L) arranged in a predetermined effective area on the substrate, wherein the three-dimensional structures (right 301, For example Fig. 2L) have space portions (between 430 and 310, For example Fig. 2L), which are formed by removing a sacrificial layer, between the three-dimensional structures (right 301, For example Fig. 2L) and the substrate (312, For example Fig. 2L), and on the substrate, a dummy area is arranged to surround the effective area, dummy structures are arranged in the dummy area, and the dummy structures have space portions (between left 430 and left 310, For example Fig. 2L), which are formed by removing a sacrificial layer, between the dummy structures (left 301, For example Fig. 2L) and the substrate (312, For example Fig. 2L).

However Park didn't discloses dummy area surrounding the effective area.

Kim discloses the dummy area in figure 3 that is surrounding the effective area.

Since Park and Kim are both from the same field of endeavor protection of effective device, the purpose disclosed by Kim would have been recognized in the pertinent art of Park.

Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to have use Kim's dummy region surround the effective area for the purpose of protecting the inter structure so during the manufacture process wont damage the effective device.

With respect to claim 2, Park discloses a portion of the dummy structures (left 301, For example Fig. 2L) opposed to the substrate (312, For example Fig. 2L) is formed in a same shape as the three-dimensional structures (right 301, For example Fig. 2L).

With respect to claim 3, Park discloses the dummy structures (left 301, For example Fig. 2L) have columns for fixing at least one section thereof to the substrate (312, for example fig. 2L).

With respect to claim 4, Park discloses the dummy structures (left 301, For example Fig. 2L) have a thin film (left 395, for example fig. 2L) covering the dummy area and plural columns arranged between the thin film (left 395, for example fig. 2L) and the substrate (312, for example fig. 2L).

With respect to claim 8, Kim discloses each of the three-dimensional structures in the effective area (array region in figure 3) comprises a respective portion of a wiring pattern layer (220d, For example Fig. 4d) associated therewith, the respective portions of the wiring pattern layer being configured to operate the respective three-dimensional structures in the effective area; and the dummy structures (dummy cell region in figure 4d) are not associated with the wiring pattern layer.

With respect to claim 10, Park discloses at least one respective leg (365, For example Fig. 2l) coupled to the substrate (312, For example Fig. 2L); and each of the displacement portions extends in a cantilever manner from the at least one leg.

Claim 9,11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Park et al. (6,136,390) in view of Kim et al. (6420744) further in view of Wu et al. (6526198).

With respect to claim 9, park discloses invention set forth to claim 1, wherein each of the three-dimensional structures in the effective area and each of the dummy structures comprises a respective displacement portions.

However, Park did not discloses the three-dimensional structures include displacement portions.

Wu discloses the three-dimensional structures (figure 3a) include the displacement portions (11a, For example Fig. 3a) on which the reflecting mirrors (12, For example Fig. 3a) are placed, and the displacement portions have space portions (between 11a and 44, For example Fig. 3a), between the displacement portions and the substrate.

Since Park and Wu are both from the same field of endeavor MEMS mirror device, the purpose disclosed by Wu would have been recognized in the pertinent art of Park.

Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to have use Wu vertical mirror in Park invention for the purpose of improve, precise optical alignments in free space, and through micromechanical opt mechanical switches.

With respect to claim 11-12, Park discloses invention set forth to claim 1 but did not discloses wherein each of the displacement portions in the effective area comprises a respective

reflecting mirror situated at an end of the displacement portion a respective portion of a wiring pattern layer situated on the substrate below the respective reflecting mirror.

Wu discloses the three-dimensional structures (figure 3a) include the displacement portions (11a, For example Fig. 3a) on which the reflecting mirrors (12, For example Fig. 3a) are placed, and the displacement portions have space portions (between 11a and 44, For example Fig. 3a), between the displacement portions and the substrate a respective portion of a wiring pattern layer (11, For example Fig. 3a) situated on the substrate below the respective reflecting mirror (12,For example Fig. 3a).

Since Park and Wu are both from the same field of endeavor MEMS mirror device, the purpose disclosed by Wu would have been recognized in the pertinent art of Park.

Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to have use Wu vertical mirror in Park invention for the purpose of improve, precise optical alignments in free space, and through micromechanical opt mechanical switches.

With respect to claim 13, Park did not discloses the displacement portions

However Wu discloses the displacement portions comprises two legs (142, For example Fig. 3a) coupled to the substrate (144, For example Fig. 3a); and each of the displacement portions extends in a cantilever manner from the respective legs.

Since Park and Wu are both from the same field of endeavor MEMS mirror device, the purpose disclosed by Wu would have been recognized in the pertinent art of Park.

Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to have use Wu two legs MEMS mirror device in Park invention for the purpose of improvement of stabilizing the structure.

Claim 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Park et al. (6,136,390) in view of Kim et al. (6420744) further in view of Wu et al. (6526198).

With respect to claim 5, Park discloses optical waveguide substrate (312, For example Fig. 2L); and three-dimensional structures (right 301, For example Fig. 2L) arranged in a predetermined effective area on the substrate, wherein the three-dimensional structure (right 301, For example Fig. 2L) element substrate (right side 312, For example Fig. 2L) has a substrate and three-dimensional structures (right 301, For example Fig. 2L) arranged in a predetermined effective area on the substrate, on the substrate, a dummy area is arranged to surround the effective area, dummy structures (left 301, For example Fig. 2L) are arranged in the dummy area (forming an array of a pair of cavities device dummy area is surrounding 3-d structure), and the dummy structures (left 301, For example Fig. 2L) have space portions (between left 430 and left 310, For example Fig. 2L), which are formed by removing a sacrificial layer, between the dummy structures (left 301, For example Fig. 2L) and the substrate (312, For example Fig. 2L).

However, Park did not discloses the three-dimensional structures include the reflecting mirrors and displacement portions on which the reflecting mirrors are placed, and the displacement portions have space portions, between the displacement portions and the substrate.

Wu discloses the three-dimensional structures (figure 3a) include the reflecting mirrors (12, For example Fig. 3a) and displacement portions (11a, For example Fig. 3a) on which the reflecting mirrors (12, For example Fig. 3a) are placed, and the displacement portions have space

portions (between 11a and 44, For example Fig. 3a), between the displacement portions and the substrate.

Since Park and Wu are both from the same field of endeavor MEMS mirror device, the purpose disclosed by Wu would have been recognized in the pertinent art of Park.

Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to have use Wu vertical mirror in Park invention for the purpose of improve, precise optical alignments in free space, and through micromechanical opt mechanical switches.

However Park didn't discloses dummy area surrounding the effective area.

Kim discloses the dummy area in figure 3 that is surrounding the effective area.

Since Park and Kim are both from the same field of endeavor protection of effective device, the purpose disclosed by Kim would have been recognized in the pertinent art of Park.

Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to have use Kim's dummy region surround the effective area for the purpose of protecting the inter structure so during the manufacture process wont damage the effective device.

With respect to claim 6, Park discloses three-dimensional structures (right 301, For example Fig. 2L) the micro device has a substrate (312, For example Fig. 2L) and the thin film three-dimensional structures (right 301, For example Fig. 2L) arranged in a predetermined effective area on the substrate (right 312, For example Fig. 2L), the thin film three-dimensional structures (right 301, For example Fig. 2L) have space portions (between 430 and 310, For example Fig. 2L), which are formed by removing a sacrificial

layer, between the three-dimensional structures (right 301, For example Fig. 2L) and the substrate (312, For example Fig. 2L), and on the substrate, a dummy area is arranged to surround the effective area, dummy structures (left 301, For example Fig. 2L) are arranged in the dummy area (forming an array of a pair of cavities device dummy area is surrounding 3-d structure), and the dummy structures (left 301, For example Fig. 2L) have space portions (between left 430 and left 310, For example Fig. 2L), which are formed by removing a sacrificial layer, between the dummy structures (left 301, For example Fig. 2L) and the substrate (312, For example Fig. 2L).

However Park didn't discloses dummy area surrounding the effective area.

Kim discloses the dummy area in figure 3 that is surrounding the effective area.

Since Park and Kim are both from the same field of endeavor protection of effective device, the purpose disclosed by Kim would have been recognized in the pertinent art of Park.

Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to have use Kim's dummy region surround the effective area for the purpose of protecting the inter structure so during the manufacture process wont damage the effective device.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 7 is rejected under 35 U.S.C. 102(b) as being anticipated by Park et al. (6,136,390).

With respect to claim 7, Park discloses a step of forming a sacrificial layer (340, for example fig. 2K) and predetermined thin film (185, for example fig. 2K) three-dimensional structures (right 301, for example fig. 2K) in a predetermined effective area on a substrate (312, for example fig. 2K) and forming a sacrificial layer (340, for example fig. 2K) and predetermined thin film (185, for example fig. 2K) dummy structures (left 301, for example fig. 2K) in a dummy area surrounding the effective area; and a step of removing the sacrificial layers (340, for example fig. 2k) in the effective area and the dummy area with a dry process (column 2, lines 1-5).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tsz K. Chiu whose telephone number is 517-272-8656. The examiner can normally be reached on 0800 to 1700.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Zandra V. Smith can be reached on 571-272-2429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TC
December 20, 2006

Roy Potter
Primary Examiner
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